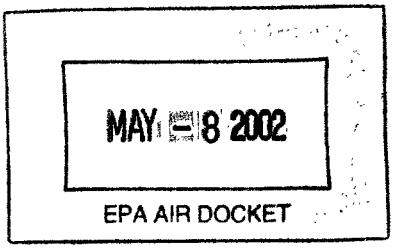
A-2000-24
II-B-01

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

Application for Critical Use Exemption of Methyl Bromide for Use in 2005 in the United States

WHY IS THIS INFORMATION NEEDED?	Under the Clean Air Act and the international treaty to protect the ozone layer (the Montreal Protocol on Substances that Deplete the Ozone Layer), the production and import of methyl bromide will be phased out in the United States on January 1, 2005. This application seeks information to support a U.S. request to produce and import methyl bromide for certain critical uses and circumstances beyond this 2005 phaseout date. The information in this application will be used to review whether your use of methyl bromide is "critical" because no technically and economically feasible alternatives are available. In order to estimate the loss as a result of not having methyl bromide available, EPA needs to compare data (yields, crop/commodity prices, revenues and costs) for your use of methyl bromide with uses of alternative pest control regimens. If you submit a well documented application with sound reasons why alternatives are not technically and economically feasible, the U.S. government can be a better advocate for your exemption request internationally.

Click on the Instructions tab located at the bottom of the screen for additional information.



OMB Control # **2060-0482**

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

INSTRUCTIONS

The information provided by you in this application will be used to evaluate the requested methyl bromide use. The U.S. and other countries that are parties to the Montreal Protocol On Substances That Deplete The Ozone Layer decided that: "a use of methyl bromide should qualify as "critical" only if the nominating Party determines that:

(i) The specific use is critical because the lack of availability of methyl bromide for that use would result in a significant market disruption; and
(ii) There are no technically and economically feasible alternatives available to the user that are acceptable from the standpoint of environment and health and are suitable to the crops and circumstances of the nomination ..."

WHO APPLIES?	If you anticipate that you will need methyl bromide in 2005 because you believe there are no technically and economically feasible alternatives, then you should apply for the critical use exemption. This application may be submitted either by a consortium representing multiple users or by individual users. We encourage users with similar circumstances of use to submit a single application (for example, any number of pre-plant users with similar soil, pest, and climactic conditions can submit a single application.) If a consortium is applying for multiple methyl bromide users, the economic data should be for a representative or typical user within the consortium unless otherwise noted. If economic or technical factors (such as size of the farm) affecting the ability of this "representative user" to use alternatives are significantly different than other users in the consortium, more than one application should be submitted to reflect these differences. Please contact your local, state, regional or national commodity association and/or state representative agency to find out if they plan on submitting an application on behalf of your commodity group.
STATE CONTACTS	States that have agreed to participate in the exemption process are listed on EPA's website at www.epa.gov/ozone/mbr/cueqa.html
HOW DO I APPLY?	You may either complete an electronic (Microsoft Excel) or a printed version of the application. Please fill out each form or worksheet in the application as completely as possible. If you are completing the printed version and need extra space you may attach additional sheets as needed. Additional information may be available from your local state department of agriculture or at the sites listed below or by calling 1-800-296-1996.
SECTIONS OF WORKBOOK	Each worksheet number corresponds to the tab number in the electronic version of the application. Instructions specific to each worksheet are provided at the top of each sheet. A header row is included on each worksheet to include an application ID number that EPA will assign. **Instructions** **Worksheet 1.** Contact and Methyl Bromide Request Information **Worksheet 2.** Methyl Bromide - Historical Data 2-A. Methyl Bromide Use 1997-2000 2-B. Methyl Bromide - Crop/Commodity Yield and Revenue 1997-2000 2-C. Methyl Bromide - Crop/Commodity Yield and Revenue 2001 2-D. Methyl Bromide Use and Costs for 2001 2-E. Methyl Bromide - Other Operating Costs for 2001 2-F. Methyl Bromide - Fixed and Overhead Costs **Worksheet 3.** Alternatives - Feasibility of Alternatives to Methyl Bromide 3-A. Alternatives - Technical Feasibility Research Summary Worksheet Example Research Sum (Summary) Worksheet 3-B. Alternatives - Pest Control Regimen Costs 3-C. Alternatives - Crop/Commodity Yield and Revenue 3-D. Alternatives - Other Operating Costs **Worksheet 4.** Alternatives - Research Plans **Worksheet 5.** Additional Information **Worksheet 6.** Application Summary **Fumigation Cycle** **Climate Zone Map**

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

IS MY INFORMATION CONFIDENTIAL?	The applicant may assert a business confidentiality claim covering part or all of the information in the application by placing on (or attaching to) the information, at the time it is submitted to EPA, a cover sheet, stamped or typed legend, or other suitable form of notice employing language such as trade secret, proprietary, or company confidential. Allegedly confidential portions of otherwise non-confidential documents should be clearly identified by the applicant, and may be submitted separately to facilitate identification and handling by EPA. If the applicant desires confidential treatment only until a certain date or until the occurrence of a certain event, the notice should so state. Information covered by a claim of confidentiality will be disclosed by EPA only to the extent, and by means of the procedures set forth under 40 CFR Part 2 Subpart B; 41 FR 36902, 43 FR 400000. 50 FR 51661. If no claim of confidentiality accompanies the information when it is received by EPA, it may be made available to the public by EPA without further notice to the applicant. Applicants submitting their application via e-mail assume responsibility for the confidentiality of the electronic me
WHEN IS THE INFORMATION NEEDED?	This application must be postmarked to the EPA address below no later than 120 days after the Notice was published in the Federal Register requesting critical use exemption applications.
WHERE DO I SUBMIT THE APPLICATION?	**Electronic Address for applications:** methyl.bromide@epa.gov **(When submitting an application electronically, you should also print a hard copy, sign the copy, and submit it by mail)**
	Mailing Address for applications being submitted by mail directly to the EPA: US Environmental Protection Agency Methyl Bromide Critical Use Exemption Global Programs Division, Mail Code 6205J 1200 Pennsylvania Ave, NW Washington, DC 20460-0001
	Address for applications being sent by courier or non-U.S. Postal overnight express delivery to EPA: US Environmental Protection Agency Methyl Bromide Critical Use Exemption Global Programs Division 501 3rd St. NW Washington, DC 20001 phone: (202) 564-9410
HOW CAN I RECEIVE ADDITIONAL INFORMATION?	If you have general questions about this application call: Stratospheric Ozone Hotline 1-800-296-1996

For EPA Use Only
ID#_____

Worksheet 1. Contact and Methyl Bromide Request Information

The following information will be used to determine the amount of methyl bromide requested and the contact person for this request. It is important that we know whom to contact in case we need additional information during the review of the application.

1. **Location**
(Enter the state, region, or county. Provide more detail about the location if relevant to the feasibility of alternatives to methyl bromide.)

_____

2. **Crop/commodity**
(Include all crops/commodities that benefit from the application of methyl bromide in a fumigation cycle. A fumigation cycle is the period of time between methyl bromide fumigations.)

_____

3. **Climate**
(Individual users should enter their climate zone designation by reviewing the U.S. climate zone map. If a consortium is submitting this application, please indicate the estimated percentage of consortium users in each climate zone. This map is located at the end of this workbook or it can be reviewed online at http://www.usna.usda.gov/ Hardzone/ushzmap.html).

_____

_____

4. **Soil type** Check the box(es) for the soil types and percent organic matter that apply to your area. If a consortium is submitting this application, please indicate the estimated percentage of consortium users in each soil type.

Soil Type:	**Light** _____	**Medium** _____	**Heavy** _____
Organic Matter:	**0 to 2%** _____	**2 to 5 %** _____	**over 5%** _____

5. **Other geographic factors that may affect crop/commodity yield (e.g., water table).**

_____

6. **Consortium name** _____ **Specialty (check one)**
7. **Contact name** _____ agronomic _____
8. **Address** _____ economic _____
_____
9. **Daytime phone** _____ **10. FAX** _____
11. **E-mail** _____

List an additional contact person if available. **Specialty (check one)**

12. **Contact name** _____ agronomic _____
13. **Address** _____ economic _____
_____
14. **Daytime phone** _____ **15. FAX** _____
16. **E-mail** _____

Worksheet 1. Contact and Methyl Bromide Request Information

For EPA Use Only
ID#

17. How much active ingredient (ai) of methyl bromide are you requesting for 2005? _____ **lbs.**

If a consortium is submitting this application, the data for question 17 and 17a. should be the total for the consortium.

In the question below, area is defined as follows for each user: acres for growers, cubic feet for post harvest operations, and square feet for structural applications.

17a. How much area will this be applied to? Please list units. _____ _____ **units**

18. Are you requesting methyl bromide for additional years beyond 2005? **Yes** _____ **No** _____

18a. If yes, please list year and quantity active ingredient (ai) of methyl bromide requested in the table below and explain why you need authorization for multiple years.

_____

_____

_____

If a consortium is submitting this application, the data below should be the total for the consortium.

In the table below, **area is defined** as follows for each user: acres for growers, cubic feet for post harvest operations, and square feet for structural applications.

Year	Quantity ai (lb.) of Methyl Bromide	Area to be Treated	Unit of Area Treated
2006			
2007			

19. Target Pest(s) or Pest Problem(s):
(Be as specific as possible about the species or classes of pests relevant to the feasibility of alternatives.)

_____

_____

_____

_____

_____

20. If applying as a consortium for many users of methyl bromide, please define a *representative user*. Define exactly, issues such as size of the operation (acres treated with methyl bromide for growers, cubic feet for post-harvest operations, and square feet for structural applications), whether the representative user owns or rents the land or operation, intensity of methyl bromide use (treat regularly or only when pest reaches a threshold), pest pressure, etc.

_____

_____

_____

_____

_____

20a. Explain why this user represents the typical user in the consortium.

_____

_____

_____

_____

Worksheet 2. Methyl Bromide - Historical Use of Methyl Bromide

Purpose of Data: To establish a baseline estimate of crop/commodity yields, gross revenues, and costs using methyl bromide.		
Worksheet	**Title**	Instructions specific to each worksheet are located at the top of each sheet.
2-A	Methyl Bromide Use for 1997 - 2000	This worksheet provides data in actual usage for 1997-2000.
2-B	Methyl Bromide - Crop/Commodity Yield and Gross Revenue for 1997-2000	This worksheet provides crop/commodity yield and gross revenue for 1997 through 2000.
2-C	Methyl Bromide - Crop/Commodity Yield and Gross Revenue for 2001	This data provides historical information on crop/commodity yield and gross revenue for 2001.
2-D	Methyl Bromide Use and Costs for 2001	This worksheet isolates use and cost data for 2001.
2-E	Methyl Bromide - Other Operating Costs for 2001	This data is needed to estimate a baseline for operating costs in order to estimate the impact on operating profit and short-run economic viability as a result of not using methyl bromide.
2-F	Methyl Bromide - Fixed And Overhead Costs for 2001	This data is needed to estimate a baseline for total costs in order to estimate the impact on profitability and long-run economic viability as a result of not using methyl bromide.

For EPA Use Only
ID#_____

Worksheet 2-A. Methyl Bromide - Use 1997-2000

If a consortium is submitting this application, all data should reflect the **actual** data for the consortium.

Col A: Formulation of Methyl Bromide	Enter the appropriate data in Col B-M for each formulation, if known, and/or the totals and averages for all formulations. If you enter only the total and averages for all formulations in the last row of the table, please describe in the comments section the formulations typically used, or the approximate proportions of the formulations used.
Col B, E, H, K: Actual Area Treated	Enter the total actual area treated. Note: This number should be the total actual area treated by the individual user or total actual area for the entire consortium, for the year indicated.
Col C, F, I, L: Actual Total lbs. ai of Methyl Bromide Applied	Enter the actual total pounds active ingredient (ai) of methyl bromide applied. Note: This number should be the total pounds ai applied by the individual user or the entire consortium, for the year indicated.
Col D, G, J, M: Actual Average lbs. ai Applied per Area	Calculate the average application rates in pounds ai of methyl bromide per area aby dividing the actual total lbs. by the total area.

Area is defined below as follows for each user: acres for growers, cubic feet for post-harvest operations, and square feet for structural applications.

A	B	C	D	E	F	G	H	I	J	K	L	M
Formulation of Methyl Bromide	**1997**			**1998**			**1999**			**2000**		
	Total Actual Area Treated	**Actual Total lbs. ai of Methyl Bromide Applied**	**Average lbs. ai Applied per Area**	**Total Actual Area Treated**	**Actual Total lbs. ai of Methyl Bromide Applied**	**Average lbs. ai Applied per Area**	**Total Actual Area Treated**	**Actual Total lbs. ai of Methyl Bromide Applied**	**Average lbs. ai Applied per Area**	**Total Actual Area Treated**	**Actual Total lbs. ai of Methyl Bromide Applied**	**Average lbs. ai Applied per Area**
over 95% methyl bromide												
75% methyl bromide, 25% chloropicrin												
67% methyl bromide, 33% chloropicrin												
50% methyl bromide, 50% chloropicrin												
__% methyl bromide, __% chloropicrin												
__% methyl bromide, __% chloropicrin												
All formulations of methyl bromide												

Comments:

For EPA Use Only
ID#_____

Worksheet 2-B. Methyl Bromide - Crop/Commodity Yield and Gross Revenue 1997-2000

If a consortium is submitting this application, the data for this table should reflect the **actual averages** for the consortium.

The purpose of this worksheet is to estimate the gross revenue for 1997 - 2000 when using methyl bromide. Post-harvest and structural users may work with EPA to modify this form to accommodate differences in operations when providing gross revenue data.

Col. A: Year	Be sure to enter the year. Use as many rows as needed for each year for all the crops/commodities in the fumigation cycles from 1997 to 2000. If a fumigation cycle overlaps more than one calendar year, then the year of the fumigation cycle is the year methyl bromide was applied.
Col. B: Crop/Commodity	Enter all crops/commodities that benefit from methyl bromide in each fumigation cycle. (For example, if normally methyl bromide is applied and tomatoes are grown and harvested followed by peppers without an additional treatment of methyl bromide, then both tomatoes and peppers would be part of the same fumigation cycle.) See the Fumigation Cycle Worksheet for a comprehensive definition of the fumigation cycle. If someone other than the applicant benefits from the application of methyl bromide in the fumigation cycle and you do not have the quantitative data for the crops grown on the same land, please indicate so in the comments section below.
Col. C: Unit of Crop/Commodity	Enter the unit of measurement for each crop/commodity.
Col. D: Crop/Commodity Yield	Enter the number of units of crop/commodities produced per area.
Col. E: Price	Enter the average prices received by the users for the year and crop/commodity indicated (1997-2000).
Col. F: Revenue	To calculate, multiply the value entered in Col. D by the value entered in Col. E. If revenue differs from this formula, please explain why the revenue amount is different in the comment section below.
Total Revenue for 1997-2000	Enter the total revenue per year by adding the revenue for all crops for that year.
Average Revenue per Year:	To calculate the average revenue per year, add the revenue for each year together and divide the sum by 4.

Area is defined below as follows for each user: acres for growers, cubic feet for post-harvest operations, and square feet for structural applications.

A	B	C	D	E	F
Year Methyl Bromide was Applied	**Crop/Commodity**	**Unit of Crop/Commodity** (e.g., pounds, bushels)	**Crop/Commodity Yield** (Units per area)	**Price** (per unit of crop/commodity)	**Revenue** (per area)
				Total Revenue for 1997	
				Total Revenue for 1998	
				Total Revenue for 1999	
				Total Revenue for 2000	
				Average Revenue Per Year	

Comments:

For EPA Use Only
ID# _____

Worksheet 2-C. Methyl Bromide - Crop/Commodity Yield and Gross Revenue 2001

If a consortium is submitting this application, the data for this table should reflect the **representative user** for the consortium.

The purpose of this worksheet is to estimate the gross revenue for 2001when using methyl bromide. Post-harvest users may modify this form to accommodate differences when providing gross revenue data. If 2001 was not a typical year for the individual or for the representative user of a consortium, the applicant may provide additional data for a different year. However, all applicants must complete this worksheet for the year 2001 regardless. Please explain in the comment section at the bottom of the worksheet why 2001 is not considered a typical year, if that is the case.

Col. A: Crop/Commodity	Enter all crops/commodities that benefit from methyl bromide in the fumigation cycle (interval between fumigations) beginning with the treatment of methyl bromide in 2001. If multiple crops are grown during the interval between fumigations (e.g. tomatoes followed by peppers in a single growing season, or strawberries followed by lettuce over 2 or 3 years) include all of the crops during the entire interval. See the Fumigation Cycle Worksheet for a comprehensive definition of the fumigation cycle. If someone other than the applicant benefits from the application of methyl bromide in the fumigation cycle and you do not have the quantitative data for the crops grown on the same land, please indicate so in the comments section below.
Col. B: Price Factors	Enter factors that determine prices (e.g., grade, time, market). If you received different prices for your crop/commodity as a result of quality, grade, market (e.g. fresh or processing), timing of harvest, etc., you may itemize by using more than one row. Itemize or aggregate these factors to the extent appropriate in making the case that the use of methyl bromide affects these price factors.
Col. C: Unit of Crop/Commodity	Enter the unit of measurement for each crop/commodity.
Col. D: Crop/Commodity Yield	Enter the number of units of crop/commodity produced per area for that price factor.
Col. E: Price	Enter average 2001 prices received by the users for that crop/commodity and price factor.
Col. F: Revenue	To calculate multiply the value entered for yield by the value entered for price. If revenue is not equal to yield times price, please explain why this revenue amount is different in the comment section below.

Area is defined below as follows for each user: acres for growers, cubic feet for post-harvest operations, and square feet for structural applications.

A	B	C	D	E	F
Crop/Commodity	**Price Factors** (grade, time, market)	**Unit of Crop/Commodity** (e.g., pounds, bushels)	**Crop/Commodity Yield** (Units per area)	**Price** (per unit of crop/commodity)	**Revenue** (per area)
				Total Revenue	

Comments:

For EPA Use Only
ID#_____

Worksheet 2-D. Methyl Bromide - Use and Costs for 2001

If a consortium is submitting this application, the data in Cols. B, C, D, and E should reflect the *representative user* in the consortium. The data in Col. F should reflect the **actual** area treated by all users in the consortium.

If the methyl bromide is custom applied then put the cost per area in Column G and fill in the average lb ai of methyl bromide applied per area (Col B) and the Total Actual Area Treated (Col F).

If 2001 was not a typical year for the individual or for the representative user of a consortium, the applicant may provide additional data for a different year. However, all applicants must complete this worksheet for the year 2001 regardless. If you provide an additional year's data, please explain in the comment section at the bottom of the worksheet why 2001 is not considered a typical year.

Col. A: Formulation of Methyl Bromide	Enter the appropriate data in Col B-G for each formulation, if known, and/or the totals and averages for all formulations of methyl bromide. If you just enter data in the bottom row in the table (All formulations of methyl bromide), please describe in the comments, the relative usage of the various formulations, to the extent known.
Col B: Average lbs. active ingredient (ai) of Methyl Bromide Applied per Area	Enter the average pounds active ingredient (ai) of methyl bromide applied per area.
Cols. C, D, E, G: Prices and Costs	Enter the average price per pound active ingredient (ai) of methyl bromide in Col. C and the average cost of applying methyl bromide per area treated in Col. D. In Col. E, enter the average other costs per area associated with applying methyl bromide (e.g., tarps). To calculate Column G, multiply the value entered in Col. B by Col. C, and add to this Cols. D and E. If methyl bromide is custom applied, enter the cost per area in Col. G and fill in Cols. B and F.
Col. F: Actual Area Treated	Enter the **actual** area treated. Note: This number should be the total area treated by all users in the consortium.

Area is defined below as follows for each user: acres for growers, cubic feet for post-harvest operations, and square feet for structural applications.

A	B	C	D	E	F	G
Formulation of Methyl Bromide	**Lb. ai of Methyl Bromide Applied per Area (2001 Average)**	**Price per lb. ai of Methyl Bromide (2001 Average)**	**Cost of Applying Pesticide per Area (2001 Average)**	**Other MBr Costs (e.g. tarps, etc.) per Area (2001 Average)**	**Total Actual Area Treated in the Consortium**	**Cost per Area**
over 95% methyl bromide						
75% methyl bromide, 25% chloropicrin						
67% methyl bromide, 33% chloropicrin						
50% methyl bromide, 50% chloropicrin						
__% methyl bromide, __% chloropicrin						
__% methyl bromide, __% chloropicrin						
All formulations of methyl bromide						

Comments:

For EPA Use Only
ID#_____

Worksheet 2-E. Methyl Bromide - *Other* Operating Costs for 2001

Do not include methyl bromide costs.

If a consortium is submitting this application, the data for this table should reflect a **representative user.**

Enter all operating costs except methyl bromide costs incurred during the fumigation cycle (interval between fumigations) beginning in 2001. See the Fumigation Cycle Worksheet for a comprehensive definition of the fumigation cycle. Enter these costs in Col B for custom operations, **or** in Col C and D for operations done by user.

Submit crop budgets for each crop, if available. You may submit crop budgets electronically or in hard copy. If your costs are significantly different than the crop budgets, please explain in the comments.

Col A: Operation	Identify in Col A the operations (except methyl bromide) to which the costs apply. For growers, these operations should include but are not limited to (1) prepare soil, (2) fertilize, (3) irrigate, (4) plant, (5) harvest, (6) other pest controls, etc. You must include all other operating costs.
Col B: Custom Operation Cost	If you incur custom operation costs, enter those costs in Col. B.
Col C: Material Cost per Area	If you do not incur custom operation costs, enter the material cost per area.
Col D: Labor Cost per Area	If you do not incur custom operation costs, enter the labor cost per area.
Col E: Total Cost per Area	To calculate cost per area, add Cols. C and D.
Col F: Typical Equipment Used	Identify the typical equipment used for operations done by user. Please be specific, such as tractor horsepower. No cost data is required in this column.

Area is defined below as follows for each user: acres for growers, cubic feet for post-harvest operations, and square feet for structural applications.

A	B	C	D	E	F
Operation	**Custom Operation Cost per Area**	**Operation Done by User**			
		Material Cost per Area	**Labor Cost per Area**	**Total Cost per Area**	**Typical Equipment Used**
Total Custom per Area	$ 0.00		**User Total per area**		

For EPA Use Only
ID#_____

Worksheet 2-F. Methyl Bromide Fixed and Overhead Costs in 2001

If a consortium is submitting this application, the data for this table should reflect a **representative user.**	
Enter **all** fixed and overhead costs incurred during the fumigation cycle (interval between fumigations) beginning in 2001. See the Fumigation Cycle Worksheet for a comprehensive definition of the fumigation cycle.	
Col A: Cost Item	Identify in Col. A the cost items. These items should include, but are not limited to: (1) land rent, (2) interest, (3) depreciation, (4) management, and (5) overhead such as office and administration.)
Col B: Description	Please describe the cost in more detail.
Col C: Allocation Method	Please describe how you estimated the portion of total fixed cost of the farm or entity that applies to this crop/commodity.
Col D: Cost per Area	Enter the cost per area of methyl bromide treated.
Area is defined below as follows for each user: acres for growers, cubic feet for post-harvest operations, and square feet for structural applications.	

A	B	C	D
Cost Item	**Description**	**Allocation Method**	**Cost per Area**
		Total	$0.00

Comments:

Worksheet 3. Alternatives - Feasibility of Alternative Pest Control Regimens

Purpose of Data on Alternative Pest Control Regimens: To estimate the loss as a result of not having methyl bromide available. EPA needs to compare data (yields, crop/commodity prices, gross revenues and costs) on the use of methyl bromide and alternative pest control regimens.

Complete each of the worksheets below (3-A, 3-B, 3-C, and 3-D) for each alternative pest control regimen listed in the "U.S. Matrix" for chemical controls (www.epa.gov/ozone/mbr/cueqa.html) and the "International Matrix" for non-chemical pest controls (www.epa.gov/ozone/mbr/cue). Each worksheet contains a place holder in the title for you to insert the name of the specific alternative pest control regimen addressed. You should add additional worksheets as required. Please add a number designation to each worksheet title to indicate a different alternative. For example, for the first alternative pest control regimen label the worksheets as 3-A(1), 3-B(1), 3-C(1), and 3-D(1). For the second alternative pest control regimen label the worksheets 3-A(2), 3-B(2), 3-C(2), and 3-(D)(2).

Enter all alternative pesticides and pest control methods (and associated cost and yield data) that would replace one treatment of methyl bromide throughout the fumigation cycle. See the fumigation cycle worksheet for a comprehensive definition.

Worksheet	Title	
3-A	Alternatives - Technical Feasibility	This form is used to obtain information on the chemical alternatives identified by the Methyl Bromide Technical Options Committee (MBTOC) that are registered for use in the United States, as well as the non-chemical alternatives identified by the MBTOC. Applicants **must** address the technical feasibility of all the chemical and non-chemical alternatives identified on the list.
3-B	Alternatives - Pest Control Regimen Costs	This form is used to estimate the cost of using alternative pest control regimens.
3-C	Alternatives - Crop/ Commodity Yield and Gross Revenue	This form is used to estimate the crop/commodity yields and gross revenues when using alternative pest control regimens.
3-D	Alternatives - Changes in Other Costs	This form is used to estimate change in any other costs as a result of using the alternatives.

For EPA Use Only
ID#_____

Worksheet 3-A. Alternatives - Technical Feasibility of Alternatives to Methyl Bromide

In this worksheet, you should address why an alternative pest management strategy on the list (see previous page) is or is not effective for your conditions. This worksheet contains 9 questions. You must complete one copy of worksheet 3-A for each research study you use to evaluate a single methyl bromide alternative. Use additional pages as need.

For worksheet 3-A you must complete one worksheet for each alternative, for each research study addressed. Please number the worksheets as follows. For the same alternative, first research study, label the worksheet 3-A(1)(a). For the same alternative, second research study, label the worksheet 3-A(1)(b). For the first alternative, third research study, label the worksheet 3-A(1)(c). For the second alternative, first research study, label the worksheet 3-(A)(2)(a). For the second alternative, second research study, label the worksheet 3-(A)(2)(b).

When completing Section II, if you cite a study that is on the EPA website, you only need to complete questions 1, 5, and 8.

Summarize each of the research studies you cite in the Research Summary Worksheet.

If you prefer, you may provide the information requested in this worksheet in a narrative review of one or more relevant research reports. The narrative review must reply to Section I and questions 1 through 8 in Section II. A Research Summary Worksheet of relevant treatments should be provided for each study reviewed.

BACKGROUND

EPA must consider whether alternative pest control measures (pesticide and non-pesticidal, and their combination) could be used successfully instead of methyl bromide by crop and circumstance (geographic area.) The Agency has developed a list of possible alternative pest control regimens for various crops, which can be found at http://www.epa.gov/ozone/mbr or by calling 1-800-296-1996.

There are three major ways you can provide the Agency with proof of your investigative work.
(1) Conduct and submit your own research
(2) Cite research that has been conducted by others
(3) Cite research listed on the EPA website

Whether you conduct the research yourself or cite studies developed by others, it is important that the studies be conducted in a scientifically sound manner. The studies should include a description of the experimental methodology used, such as application rates, application intervals, pest pressure, weather conditions, varieties of the crop used, etc. All results should be included, regardless of outcome. **You must submit copies of each study to EPA** unless they are listed on the Agency website.

The Agency has posted many research studies on a variety of crops on its website and knows of more studies currently in progress. EPA will add studies to its website as they become publicly available. You are encouraged to review the EPA website and other websites for studies that pertain to your crop and geographic area.

In addition, EPA acknowledges that, for certain circumstances, some alternatives are not technically feasible and therefore no research has been conducted (i.e. solarization may not be feasible in Seattle). You should look at the list of alternatives provided by the Agency and explain why they cannot be used for your crop and in your geographic area.

Use additional pages as needed.

Alternative: [Insert Alternative] **Study:** [Insert Study Title]

Section I. Initial Screening on Technical Feasibility of Alternatives

1. Are there any location-specific restrictions that inhibit the use of this alternative on your site?

1a. Full use permitted _____

1b. Township caps _____

1c. Alternative not acceptable in consuming country _____

1d. Other (Please describe) _____

_____

_____

_____

_____

If use of this alternative is precluded by regulatory restriction for all users covered by this application, the applicant should not complete Section II.

For EPA Use Only
ID#_____

Worksheet 3-A. Alternatives - Technical Feasibility of Alternatives to Methyl Bromide

Section II. Existing Research Studies on Alternatives to Methyl Bromide

1. Is the study on EPA's website? Yes _____ No _____

   1a. If not on the EPA website, please attach a copy.

2. Author(s) or researcher(s) _____

3. Publication and Date of Publication _____

4. Location of research study _____

5. Name of alternative(s) in study. If more than one alternative, list the ones you wish to discuss.

6. Was crop yield measured in the study? Yes _____ No _____

7. Describe the effectiveness of the alternative in controlling pests in the study.

8. Discuss how the results of the study apply to your situation. Would you expect similar results? Are there other factors that would affect your adoption of this tool?

Worksheet 3-A. Alternatives - Technical Feasibility of Alternatives to Methyl Bromide

For EPA Use Only
ID#

Research Summary Table

Alternative: [Insert Alternative] **Study:** [Insert Study Title]

Provide one summary table for each study being described.

Provide a summary table of research information that will allow us compare the impact of methyl bromide and the alternative regimen on such things as pest control, yield or quality of the commodity being treated, or protected. Ideally, a research study should directly compare methyl bromide and the alternative regimen.

Col. A: Treatment Number	List the treatment number from the research study you are citing.
Col. B: Treatment	List what type of pest control method was used.
Col. C: Rate	Enter the pounds or gallons of a chemical used, days of solarization, etc.
Col. D, F, H, J, L, N: Interval	Enter the interval after treatment that the rating was taken. Enter the interval (days, weeks or months) in the column heading or in the comments section. In the comments describe the rating scale (e.g. 0 to 100 where 100 is complete control).
Cols. E, G, I, K, M, O: Rating for Interval:	Use these columns to describe the level of control provided for a specific pest and the time interval at which the rating was taken. For example, a study for nematode control may have looked at nematode population in the soil pre-treatment, 3 weeks after treatment, and 6 weeks after treatment. In this example, type over the words "Rating Interval 1" with "pre-treatment", type over "Rating Interval 2" with "3 weeks", and type over "Rating Interval 3" with "6 weeks." If you are completing the printed version, please define Rating Interval in the comments below.
Control of Pests 1 and 2 (*Cols. D - I and Cols. J - O*):	For the target pest(s) in the study list the pest or pest species being rated in the column header or the comments section. For example, a study for nematode control in tomatoes may have looked at sting nematode and stunt nematode. Enter sting nematode for pest 1 in the Col F header below and stunt nematode for pest 2 in the Col. L header below. In the comments section describe the rating system used (0 to 100 scale where 0 is no control, number of nematodes per gram of soil, number of colony forming units per gram of soil, etc.).
Col. J: Yield	Enter the marketable yield of the crop or commodity and specify the units (lbs./acre, tons) in the column header or comments section.

Area is defined below as follows for each user: acres for growers, cubic feet for post-harvest operations, and square feet for structural applications.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Treatment Number	**Treatment**	**Rate (lbs. or gals. ai per area)**	**Pest 1**						**Pest 2**						**Yield (units/area)**
			Interval 1	**Rating for Interval 1**	**Interval 2**	**Rating for Interval 2**	**Interval 3**	**Rating for Interval 3**	**Interval 1**	**Rating for Interval 1**	**Interval 2**	**Rating for Interval 2**	**Interval 3**	**Rating for Interval 3**	

Comments:

Example Research Summary Table

Alternative: Example **Study:** _____

Provide one summary table for each study being described.

Provide a summary table of research information that will allow us compare the impact of methyl bromide and the alternative regimen on such things as pest control, yield or quality of the commodity being treated, or protected. Ideally, a research study should directly compare methyl bromide and the alternative regimen.

Col. A: Treatment Number	List the treatment number from the research study you are citing.
Col. B: Treatment	List what type of pest control method was used.
Col. C: Rate	Enter the pounds or gallons of a chemical used, days of solarization, etc.
Col. D, F, H, J, L, N: Interval	Enter the intervals (days, weeks or months) that the rating was taken for each treatment in Columns D, F, H, J, L, and N. For example, a study for nematode control may have looked at nematode population in the soil pre-treatment, 3 weeks after treatment, and 6 weeks after treatment. For this example, insert "pre-treatment" in the "Interval 1" column , insert "3 weeks" in the "Interval 2" column, and insert "6 weeks" in the "Interval 3" column."
Cols. E, G, I, K, M, O: Rating for Interval:	In columns E, G, I, K, M, and O insert the rating (the level of control provided for a specific pest) for each interval for each treatment described. In this example, for the methyl bromide treatment for sting nematode enter 669 for the "Rating for Interval 1", 221 for the "Rating for Interval 2", and 120 for the "Rating for Interval 3." In the comments section below describe the rating scale (e.g., nematodes per gram of soil, number of colony forming units per gram of soil, etc.).
Control of Pests 1 and 2 (Cols. D - I and Cols. J - O):	For the target pest(s) in the study list the pest or pest species being rated in the column header or the comments section. For example, a study for nematode control in tomatoes may have looked at sting nematode and stunt nematode. Enter sting nematode for pest 1 in the Col F header below and stunt nematode for pest 2 in the Col. L header below. In the comments section describe the rating system used (0 to 100 scale where 0 is no control, number of nematodes per gram of soil, number of colony forming units per gram of soil, etc.)
Col. J: Yield	Enter the marketable yield of the crop or commodity and specify the units (lbs./acre, tons) in the column header or comments section.

Area is defined below as follows for each user: acres for growers, cubic feet for post-harvest operations, and square feet for structural applications.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Treatment Number	**Treatment**	**Rate (lbs. or gals. ai per area)**	Sting nematode						Stunt nematode						**Yield (lbs/acre)**
			Interval 1	**Rating for Interval 1**	**Interval 2**	**Rating for Interval 2**	**Interval 3**	**Rating for Interval 3**	**Interval 1**	**Rating for Interval 1**	**Interval 2**	**Rating for Interval 2**	**Interval 3**	**Rating Interval 3**	
1	Untreated	-	pre-trt	700	3 wks	700	6 wks	707	pre-trt	100	3 wks	111	6 wks	109	5,000
2	Methyl Bromide	300 gal.	pre-trt	669	3 wks	221	6 wks	120	pre-trt	98	3 wks	77	6 wks	36	8,000
3	Iodo methane	150 gal.	pre-trt	675	3 wks	250	6 wks	125	pre-trt	111	3 wks	35	6 wks	32	7,580

Comments:
Ratings are for nematodes per gram of soil

OMB Control # 2060-0482

For EPA Use Only
ID#_____

Worksheet 3-B. Alternatives - Pest Control Regimen Costs for Alternative: [Insert name of alternative]

If a consortium is submitting this application, the data for this table should reflect a **representative user.**

Col. A: Name of Product and Non-chemical Control	Enter all alternatives and non-chemical pest control that would replace one treatment of methyl bromide throughout the fumigation cycle. See the Fumigation Cycle Worksheet for a comprehensive definition of the fumigation cycle. If multiple crops are grown during the interval between fumigations (e.g. tomatoes followed by peppers in a single growing season, or strawberries followed by lettuce over 2 or 3 years) include all of the pesticides that replace methyl bromide for the entire interval. Do not include pesticides that are used along with methyl bromide--enter only the additional pest control if methyl bromide were not available. If someone other than the applicant previously benefited from the application of methyl bromide in the fumigation cycle and you do not have the quantitative data for the crops grown on the same land, please indicate so in the comments section below.
Col. B: Target Pests	Be as specific as possible regarding the species or classes of pests controlled by the active ingredient or pesticide product.
Col. C: Active Ingredients	Use one row for each active ingredient (ai). For example, if a product contains 2 ai's use 2 rows for that product. Once a row is completed for a given product, then only Col. B (if applicable), C, and E need to be completed for additional rows regarding the same product.
Col. D: Formulation	Enter the formulation or the % of active ingredient.
Col. E, F, G: Application Rate	As a cross check, EPA is requesting both the amount of active ingredient in Col. E and product applied per area in Col. F. Indicate the unit of the product in Col. G.
Col. H, I, J: Prices and Costs	**Use 2001 prices and costs.** If the product is custom applied you may enter the total cost in the last column (Col. M) and override the formula. If a pesticide is applied by the user, enter the price of the product in Col. H and the cost of applying it in Col. I. Enter any other costs associated with **applying** this product in Col. J, specifying what they are in the comments section at the bottom of this sheet.
Col. K: Area Treated	Enter the area receiving at least one application of the pesticide.
Col. L: # of Applications per Year	Enter the number of applications in a fumigation cycle comparable to methyl bromide for this alternative pest control regimen. Since this number is an average, it does not need to be a whole number.
Col. M: Cost per Area in 2001 Dollars	Enter the cost per area in 2001 dollars. To calculate, use the following formula: (Col. F (x) Col. H + Col. I + Col. J) (x) Col. L. If the product was custom applied, enter this figure.
Non-chemical Control	Enter data near the bottom of the form. Identify the control in Col. A. Enter the target pests in Col. B. Describe the non-chemical pest control Col. B-L. Enter the costs in Col. M in 2001 dollars.

Area is defined below as follows for each user: acres for growers, cubic feet for post-harvest operations, and square feet for structural applications.

A	B	C	D	E	F	G	H	I	J	K	L	M
Name of Product	**Target Pests**	**Active Ingredients (ai) in Product**	**Formulation of Product**	**Application Rate**			**Price per Unit of the Product**	**Cost of Applying Pesticide per Area**	**Other Costs per Application**	**Area Treated at Least Once**	**# of Applications per Year**	**Cost per Area (2001$)**
				lbs. ai per Area per Application	**Units of product per Area per Application**	**Product Unit (e.g., lbs., gals)**						
Non-Chemical Pest Control	**Target Pests**	**Description**										**Cost/area**
											Total	

Comments:
If you do not have the quantitative data for additional crops grown on the same land, please indicate so in the comment section.

For EPA Use Only
ID#_____

Worksheet 3-B. Alternatives - Pest Control Regimen Costs for Alternative: Product X

If a consortium is submitting this application, the data for this table should reflect a **representative user.**	
Col. A: Name of Product and Non-chemical Control	Enter all alternatives and non-chemical pest control that would replace one treatment of methyl bromide throughout the fumigation cycle. See the Fumigation Cycle Worksheet for a comprehensive definition of the fumigation cycle. If multiple crops are grown If someone other than the applicant previously benefited from the application of methyl bromide in the fumigation cycle and you do not have the quantitative data for the crops grown on the same land, please indicate so in the comments section below.
Col. B: Target Pests	Be as specific as possible regarding the species or classes of pests controlled by the active ingredient or pesticide product.
Col. C: Active Ingredients	Use one row for each active ingredient (ai). For example, if a product contains 2 ai's use 2 rows for that product. Once a row is completed for a given product, then only Col. B (if applicable), C, and E need to be completed for additional rows regardin
Col. D: Formulation	Enter the formulation or the % of active ingredient.
Col. E, F, G: Application Rate	As a cross check, EPA is requesting both the amount of active ingredient in Col. E and product applied per area in Col. F. Indicate the unit of the product in Col. G.
Col. H, I, J: Prices and Costs	**Use 2001 prices and costs.** If the product is custom applied you may enter the total cost in the last column (Col. M) and override the formula. If a pesticide is applied by the user, enter the price of the product in Col. H and the cost of applying it in Col. I. Enter any other costs associated with **applying** this product in Col. J, specifying what they are in the comments section at the bottom of this sheet.
Col. K: Area Treated	Enter the area receiving at least one application of the pesticide.
Col. L: # of Applications per Year	Enter the number of applications in a fumigation cycle comparable to methyl bromide for this alternative pest control regimen. Since this number is an average, it does not need to be a whole number.
Col. M: Cost per Area in 2001 Dollars	Enter the cost per area in 2001 dollars. To calculate, use the following formula: (Col. F (x) Col. H + Col. I + Col. J) (x) Col. L. If the product was custom applied, enter this figure.
Non-chemical Control	Enter data near the bottom of the form. Identify the control in Col. A. Enter the target pests in Col. B. Describe the non-chemical pest control Col. B-L. Enter the costs in Col. M in 2001 dollars.

Area is defined below as follows for each user: acres for growers, cubic feet for post-harvest operations, and square feet for structural applications.

A	B	C	D	E	F	G	H	I	J	K	L	M
Name of Product	**Target Pests**	**Active Ingredients (ai) in Product**	**Formulation of Product**	**Application Rate**			**Price per Unit of the Product**	**Cost of Applying Pesticide per Area**	**Other Costs per Application** per area	**Area Treated at Least Once**	**# of Applications per Year**	**Cost per Area (2001$)**
				lbs. ai per Area per Application	**Units of product per Area per Application**	**Product Unit (e.g., lbs., gals)**						
Product X	Pest Y, Pest Z	Chemical D, Chemical F	90% Chemical D, 10% Chemical F	250	278	lbs	$ 10.00	$ 20.00	0	25	1	$ 2,800.00
Product U	Pest V, Pest Y	Chemical C	100%	150	200	gal	$ 5.00	$ 20.00	10	25	2	$ 2,060.00
												$ 0.00
												$ 0.00
												$ 0.00
												$ 0.00
												$ 0.00
												$ 0.00
												$ 0.00
												$ 0.00
												$ 0.00
												$ 0.00

Non-Chemical Pest Control	**Target Pests**	**Description**	**Cost/area**
Control P	Pest J, Pest K	Control P is done 2 times per year according to methods.	$500.00
		Total	$ 5,360.00

Comments:
If you do not have the quantitative data for additional crops grown on the same land, please indicate so in the comment section.

For EPA Use Only
ID#_____

Worksheet 3-C. Alternatives - Crop/Commodity Yield and Gross Revenue for Alternative

[Insert name of alternative]

If a consortium is submitting this application, the data for this table should reflect a *representative* user.

The purpose of this worksheet is to identify the gross revenue for units (crop, commodity, structure) when using an alternative compared to gross revenue when using methyl bromide. Post-harvest and structural users may modify this form to accommodate differences in operations when providing gross revenue data.

Col. A: Crop/Commodity	Enter all crops/commodities that can be grown/treated during the same interval of time comprising a methyl bromide fumigation cycle. Please discuss changes in crop cycles resulting from alternative use in the comments. See the Fumigation Cycle Worksheet for a comprehensive definition of the fumigation cycle. If someone other than the applicant benefits from the application of methyl bromide in the fumigation cycle and you do not have the quantitative data for the crops grown on the same land, please indicate so in the comments section below.
Col. B: Price Factors	Enter in Col. B any factors that determine prices (e.g., grade, time, market). If you received different prices for your crop/commodity as a result of quality, grade, market (e.g., fresh or processing), timing of harvest, etc., you may itemize by using more than one row. Itemize or aggregate these factors to the extent appropriate in making the case that the use of alternatives affects these price factors.
Col. C: Unit of Crop/Commodity	Enter the unit of measurement for your crop/commodity.
Col. D: Crop/Commodity Yield	Enter the number of units of crop/commodity produced per area for that price factor identified.
Col. E: Price	Enter the average 2001 prices received by the users for that crop/commodity and price factor.
Col. F: Gross Revenue	To calculate, multiply yield by price. If revenue is not equal to yield times price, please explain why in the comment section below.

Area is defined below as follows for each user: acres for growers, cubic feet for post-harvest operations, and square feet for structural applications.

A	B	C	D	E	F
Crop/Commodity	**Price Factors** (grade, time, market)	**Unit of Crop/Commodity** (e.g., pounds, bushels)	**Crop/Commodity Yield** (Units per area)	**Price** (per unit of crop/commodity)	**Revenue** (per area)
				Total Revenue	

Comments:

For EPA Use Only
ID# _____

Worksheet 3-D. Alternatives - Changes in Other Costs for Alternative: [Insert name of alternative]

If a consortium is submitting this application, the data for this table should reflect a *representative user*.

Enter data only for costs (other than the cost of alternative pest control) that change as a result of using the alternatives instead of methyl bromide. Enter the whole cost, not just the incremental changes. Enter the cost in Col. B for custom operation costs, **or** in Col. C and D for operations done by user.

Col. A: Operation or Cost Item	Identify the operations or cost items that change as a result of not using methyl bromide.
Col. B: Custom Operation Cost	Enter custom operation costs that change in Col. B.
Col. C, D, E: Costs per Area	Enter in Col. C and D, material and labor costs per area that change for operations done by user. The calculate total cost per area add the values in Cols. C and D.
Col. F: Typical Equipment Used	Identify changes in the typical equipment used by the user as a result of not using methyl bromide. Please be specific such as tractor horsepower. No cost data are required in this column.

Area is defined below as follows for each user: acres for growers, cubic feet for post-harvest operations, and square feet for structural applications.

A	B	C	D	E	F
Operation or Cost Item	**Custom Operation Cost per Area**	**Operation Done by User**			**Typical Equipment Used**
		Material Cost per Area	**Labor Cost per Area**	**Total Cost per Area**	
Total Custom per Area	$ 0.00		**User Total per area**		

Comments:

For EPA Use Only
ID#_____

Worksheet 4. Alternatives - Future Research Plans

Please describe future plans to test alternatives to methyl bromide. (All available methyl bromide alternatives from the alternatives list should have been tested or have future tests planned.) There is no need to complete a separate worksheet for future research plans for each alternative - you may use this worksheet to describe all future research plans.

1. **Name of study:** _____

2. **Researcher(s):** _____

   _____

   _____

3. **Your test is planned for:** _____

4. **Location:** _____

5. **Name of alternative to be tested:**

   _____

   _____

   _____

6. **Will crop yield be measured in the study?** Yes_____ No_____

7. **If additional testing is not planned, please explain why. (For example, the available alternatives have been tested and found unsuitable, an alternative has been identified but is not yet registered for this crop, available alternatives are too expensive for this crop, etc.)**

   _____

   _____

   _____

   _____

   _____

   _____

   _____

   _____

For EPA Use Only
ID#_____

Worksheet 5. Additional Information

1. How will you minimize your use and/or emissions of methyl bromide?

1a. Check all methods you will use ____ Nothing

____ Tarpaulin (high density polyethylene)

____ Virtually impermeable film (VIF)

____ Cultural practices (please specify) _____

_____

1b. Will you use other pesticides to reduce use of methyl bromide? Yes____ No _____

If yes please specify. _____

1c. Other non-chemical methods: (please specify):

_____

2. Do you have access to recycled methyl bromide? Yes____ No _____

If yes, how many pounds? _____ lbs.

3. Do you anticipate that you will have any methyl bromide in storage on January 1, 2005? Yes____ No _____

If yes, how many pounds? _____ lbs.

4. What is the cumulative amount spent to date by the user or consortium on research to develop alternatives to methyl bromide (beginning in 1992)? $ _____

5. Other investments, if any, made to reduce your reliance on methyl bromide. Describe each investment and its associated cost.

_____

_____

6. Identify what factors would allow you to stop or reduce your use of methyl bromide (e.g. registration of particular pesticide; completion of research plan; capital outlay).

_____

When do you expect these to occur? _____

7. Range of acres farmed by growers included in this application?
(insert number of users in each category)

_____ 0-10 acres
_____ 10-25 acres
_____ 25-50 acres
_____ 50-100 acres
_____ 100-200 acres
_____ 200-400 acres
_____ over 400 acres

For EPA Use Only
ID#_____

Worksheet 5. Additional Information (continued)

8. **Range of square feet of the area to which applicants included in this application will apply methyl bromide?** (insert number of users in each category)

____ 0 - 5,000 sq. ft.
____ 5,001 - 10,000 sq. ft.
____ 10,001 - 20,000 sq. ft.
____ 20,001 - 40,000 sq. ft.
____ 40,001 - 80,000 sq. ft.
____ 80,001 - 160,000 sq. ft.
____ over 160,000 sq. ft.

I certify that all information contained in this document is factual to the best of my knowledge.

Signature _____ **Date** _____

Print Name _____ **Title** _____

Information in this application may be aggregated with information from other applications and used by the United States government to justify claims in the national nomination package that a particular use of methyl bromide be considered "critical" and authorized for an exemption beyond the 2005 phaseout. Use of aggregate data will be crucial to making compelling arguments in favor of critical use exemptions. **By signing below**, you agree not to assert any claim of confidentiality that would affect the disclosure by EPA of aggregate information based in part on information contained in this application.

Signature _____ **Date** _____

Print Name _____ **Title** _____

OMB Control # 2060-0482

For EPA Use Only
ID#_____

Worksheet 6. Application Summary

This worksheet will be posted on the web to notify the public of requests for critical use exemptions beyond the 2005 phase out for methyl bromide. Therefore, this worksheet cannot be claimed as CBI.

1. **Name of Applicant:** _____
2. **Location:** _____
3. **Crop:** _____
4. **Pounds of Methyl Bromide Requested** 2005 _____
5. **Area Treated with Methyl Bromide** 2005 _____ _____ units
6. **If methyl bromide is requested for additional years, reason for request:**

_____

_____

2006 _____ lbs. Area Treated _____ _____ units

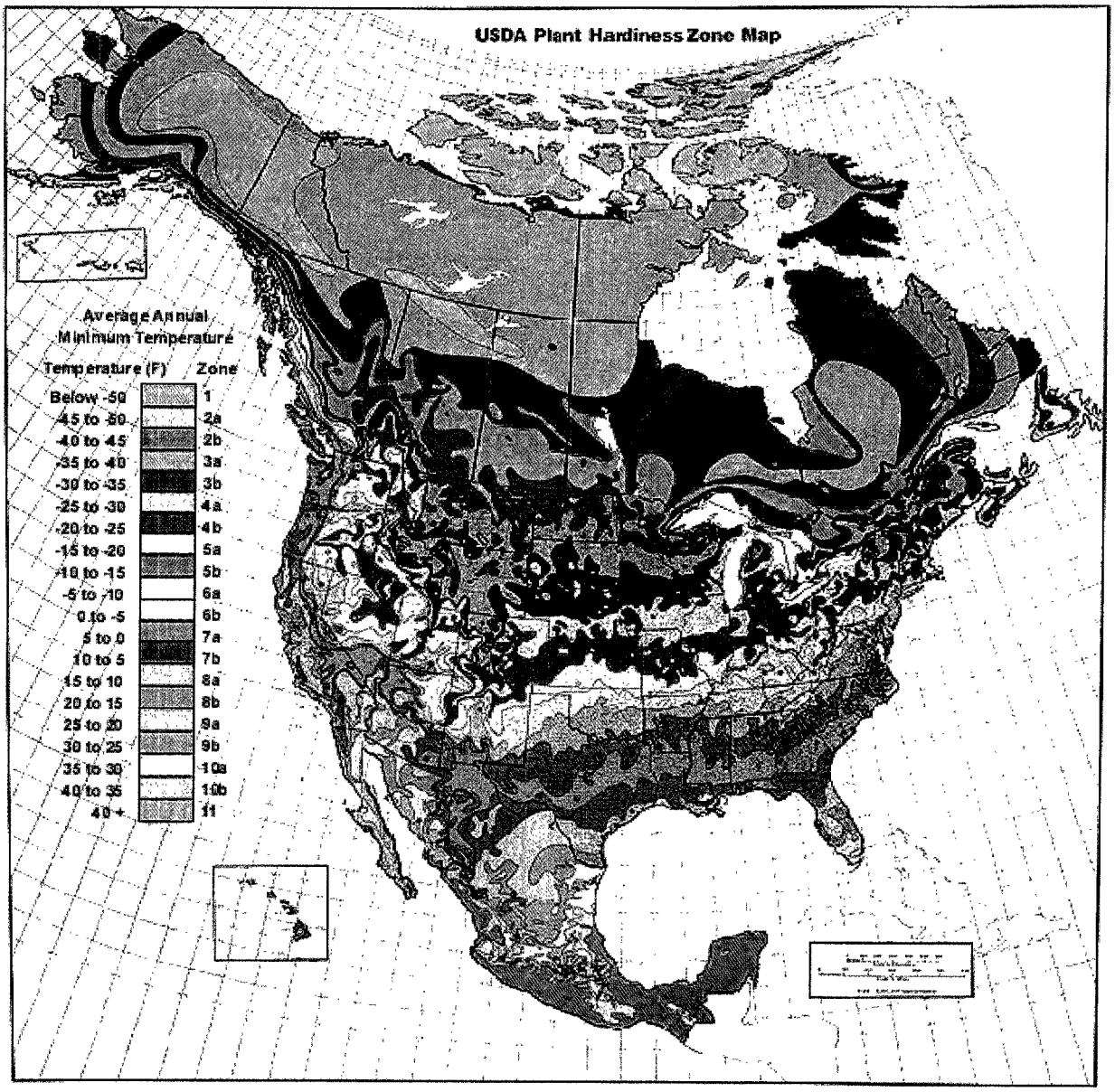
2007 _____ lbs. Area Treated _____ _____ units

Place an "X" in the column(s) labeled "Not Technically Feasible" and/or "Not Economically Feasible" where appropriate. Use the "Reasons" column to describe why the potential alternative is not feasible.

Potential Alternatives	Not Technically Feasible	Not Economically Feasible	Reasons

Fumigation Cycle Definitions:

Fumigation cycle:	The period of time between methyl bromide fumigations.
Year:	If a fumigation cycle overlaps more than one calendar year, "year" refers to the calendar year when methyl bromide is applied (or the beginning of the cycle).
Comparable data:	In order to compare revenues and costs with and without methyl bromide, data on alternatives for pest control, yields, revenues, and costs must be for the same time interval as the methyl bromide fumigation cycle. If, however, quantitative data, is not available for the entire fumigation cycle, then to be comparable, the quantitative data for the alternatives should cover the same portion of the fumigation cycle as the quantitative data for methyl bromide, and the rest of the cycle should be discussed in the comments sections.
2-year example:	If a methyl bromide fumigation is made every 2 years, then the 2001 fumigation cycle began in 2001 and would end in 2003. The data should cover the methyl bromide costs and usage for the methyl bromide fumigation made in 2001, and all yields and revenues received and other costs incurred during the 2 year period. To be comparable, the data on alternatives should cover a similar 2 year period beginning in 2005 beginning at the same time of year when a methyl bromide fumigation would be made. The data should cover all methyl bromide alternatives used, and all yields and revenues received during that 2-year interval. Other pest control and other costs would only need to be provided for that interval if they would change from what they were with methyl bromide.
Other beneficiary example	If someone other than the applicant benefits from a methyl bromide fumigation, you should comment on these benefits if you do not have quantitative data for the entire fumigation cycle. For example, if a rotational crop in the second year benefits from a methyl bromide fumigation a year earlier, but there is quantitative data only on the first crop, then the data on the alternatives should cover only the first crop, and the benefits of methyl bromide and the additional pesticides that would have to be used on the rotational crop should be discussed in the comments sections.
Crop cycle change example:	If in a one year interval, methyl bromide is applied, tomatoes are grown and harvested followed by peppers, then the fumigation cycle would be one year including the tomatoes and peppers. If, however, without methyl bromide, it is not possible to follow tomatoes with peppers in the same one year interval, then the alternative data on pesticides, costs, yields, and revenues should just cover tomatoes. The loss of profit from not being able to grow peppers with the alternatives would be part of the loss from not having methyl bromide.


USDA Plant Hardiness Zone Map
Average Annual
Minimum Temperature
Temperature (F)
Zone
Below -50
1
-45 to -50
2a
-40 to -45
2b
-35 to -40
3a
-30 to -35
3b
-25 to -30
4a
-20 to -25
4b
-15 to -20
5a
-10 to -15
5b
-5 to -10
6a
0 to -5
6b
5 to 0
7a
10 to 5
7b
15 to 10
8a
20 to 15
8b
25 to 20
9a
30 to 25
9b
35 to 30
10a
40 to 35
10b
40 +
11